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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,379	09/11/2003	David J. Schroeder	100191	6019

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STEVEN WESEMAN
ASSOCIATE GENERAL COUNSEL, I.P.
CABOT MICROELECTRONICS COPORATION
870 NORTH COMMONS DRIVE
AURORA, IL 60504

EXAMINER

GOUDREAU, GEORGE A

ART UNIT PAPER NUMBER

1763

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/660,379

Applicant(s)

SCHROEDER ET AL.

Examiner

George A. Goudreau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-98 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-98 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER
10-05

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

2. This action will not be made final due to the new grounds of rejection.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasqualoni et. al. (6,468,913).

Pasqualoni et. al. disclose a method for selectively cmp polishing a Ta/TaN barrier layer on a wafer to an underlying SiO₂ ILD layer using a cmp slurry at a pH=(9-10). The cmp slurry is comprised of the following components:

-H₂O (i.e.-an oxidizer);

-calcium hypochloride (i.e.-an oxidizer, and a source of Ca ion);

- H₂O₂ (i.e.-an oxidizer);
- an anticorrosive agent (i.e.-BTA, etc.);
- a chelating agent;
- a fluoride-containing compound (i.e.-an alkaline earth metal fluoride compound);
- an acid, which may also function as an oxidizer (i.e.-nitric acid, sulfuric acid, phosphoric acid, malic acid, citric acid, tartaric acid, phthalic acid, etc.);
- a surfactant; and
- abrasive particles (i.e.-preferably fumed silica, etc.)

This is discussed specifically in columns 3-6; and discussed in general in columns 1-10. This is shown in figure 1. This reference fails, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific cmp polishing parameters, which are claimed by the applicant

It would have been prima facie obvious to employ any of a variety of different cmp polishing parameters in the cmp polishing process which is taught above including those which are specifically claimed by the applicant. These are all well-known variables in the cmp polishing art, which are known to effect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon In re Aller as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. ≡ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the quality the cmp polishing process.

6. Claims 1-6, 11-18, 43, and 54-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cossaboon et. al. (5,769,689).

Cossaboon et. al. disclose a process for cmp polishing a substrate which is comprised of silica, Si₃N₄, or SiO₂ using a cmp slurry at a pH= (9-10) which is comprised of the following components:

- H₂O (i.e.-an oxidizer);
- fumed silica particles (i.e.-abrasive particles);
- monoethylamine;
- BaNO₃ (i.e.-a source of Ba ions as well as an oxidizer); and
- a polyhydric alcohol (i.e.-PVA, ethylene glycol, 1,2-propanediol, etc.)

This is discussed specifically in columns 4-6; and discussed in general in columns 1-8. This reference fails, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific cmp polishing parameters, which are claimed by the applicant

It would have been prima facie obvious to employ any of a variety of different cmp polishing parameters in the cmp polishing process which is taught above including those which are specifically claimed by the applicant. These are all well-known

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variables in the cmp polishing art, which are known to effect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon *In re Aller* as cited below.

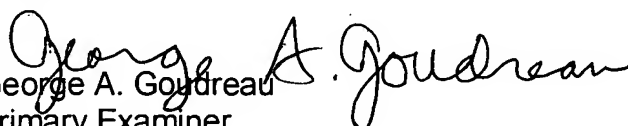
Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. ≡ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the quality the cmp polishing process.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
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